Final Project Report to the NYS IPM Program, Agricultural IPM 2000 – 2001

Title: Expanding the Implementation of Integrated Pest Management and Integrated Cropping Management through the Use of Host Farms (public meetings) and Improved Use of Communication Technology

Project Leaders: Jeffrey J. Miller and Michael Dennis; Extension Educators, CCE of Oneida County

Cooperator(s): Ken Wise (NYSIPM), local producers, local agribusinesses.

PARTICIPANTS:
FARMS THAT HOSTED SCOUTING ACTIVITY: PAUL, STEVE, PAT, PHIL, HENRY AND JOE VAN LIESHOUT: BRABENT FARM; ALLEN, DAVE, ED AND ROB COLLINS: COLLINS KNOLL FARM; GLEN AND LARRY TAYLOR: TAYLWIND FARM; JEFF, MILT AND DENNIS VAILL: VAILL FARM; TROY, HARRY AND TRAVIS FINN: FINNDALE FARM; BOB PAWLOWSKI.

FARMS THAT HOSTED PUBLIC MEETINGS: DAVE SCHIEFERSTINE (2), MARK VAN HATTEN, GARY TEEL, FRANK FROST, ROD WILLSON, GLENN TAYLOR, BOB PAWLOWSKI, RANDY BROUILLETTE, ROB COLLINS, THE VANLIESHOUTS BRABENT FARM.

AGRIBUSINESSES AND AGENCIES THAT RECEIVED FAXED UPDATES: Louis Gale and Sons (feed, fertilizer, seed sales), Agway Sangerfield Crop Center, Agway Pohls Feedway, Richer Feeds, Tom Brouillette (seed sales), Rob Williams (seed sales), CCE of Madison County, Brown's Feed, CCE Leatherstocking Team, CCE of Lewis County, Clinton Tractor, Cazenovia Farm Equipment, J.C. Lucas and Sons (farm equipment), White's Farm Supply (farm equipment), Jaquay Feed Company, Kuhn Farm Machinery, Madison County SWCD, Oneida County SWCD, Bob Dewaine (seed sales), Ag Radio Network, Nick Chuff (veterinarian).

FARMERS WHO ATTENDED THE PUBLIC MEETINGS: Gary & Jeremy Teel, Alicia Eisenhut, David and Jacob Schieferstine, L. Wenham, Rich Brucker, Walter Hafner jr., Kevin Kelly, Mike Brockett, Frank Frost, Tom and Mr. Synakowski, Mark and Ralph Rickmyer, Don Stagner, Scott Willson, James Bruggeman, Betty Selden, Glen Taylor, Rob Collins, Dave Collins, Tom Prouty, David Fitzgerald, Dale Newell, Matt Entwistle, Jeff Case, Katie Jones, Julie Suits, Bob Pawlowski, Dan Harris, Dave Sherwood, Paul vanLieshout, Davis Marquis, Mickey Welser, Randy Brouillette, Dennis Baldwin, Joe Mushala, Homer Casler, Mark Van Hatten, John vanLieshout, Joe vanLieshout, Pat vanLieshout, Henry vanLieshout, Verne Tuthill, Rod Willson and Jason Stanimer.

Farmers and agribusinesses receiving emails: Ashley Combs, Andrew J. Kross, Chris & Christine Brodock, Charlotte Cassidy, Sharon Hall, Suzanne Fitzwilliams, Ross Smith, Dale Newell, Michael Mack, Matt Entwistle: Caravel, David & Mona Whitehouse, Jackie Sadlon, Glenn Taylor, Jeff Case, Jeff Hill, Jeff Matuszczak, Jessica Melnick, John Lehr,

First Pioneer Farm Credit, Mark Welytok, Feed Industry, Kathy Evans, CCE Madison Co., Kim Hutchins, Kurt & Kay Schachtler, Kirk Schwasnick, seed sales, Tom Bixby, Leita Willson, Olivia Shoemaker, Jean Gallagher, Martin Sheppard, Jim Reilly, Paris Reidhead, Charles R. Blood, Scott L. Faulkner, William Myerhoff, Sarah Casanova, Ken Wise, IPM, Keith Schiebel, VVS teacher, Bob Frost, Farm Bureau President Lory and Pat vanLieshout, Mike Candella, Nick Chuff, Andy Mower, (seed sales) Pam Mandryck, Frank Frost, Verne Tuthill, Tom Brouillette, Bill Von Matt, Warner Luenberger, Wendy Gornick, Brymer Humphrey, Calvin Collins, Oneida Dispatch (newspaper), Floyd Fisher, Bob Blunt, Tom Prouty, Bill Paddock, Gary Sherwood, Agway, Karen Baase, CCE Madison Co., Mark Bailey, Agway and Gretchen Maine.

Type of grant: Training practitioners to use IPM techniques.

Project location(s): Oneida County

Abstract: CCE of Oneida County has used the IPM TAG Team approach from 1990-1996 + 2000 as a vehicle to teach Integrated Pest Management (IPM) and Integrated Crop Management (ICM) principles and to provide critical information on crop conditions and pest infestations to participants through small group meetings. This approach has provided enormous benefits to participants. Participants have received critical information that helped them to reduce or avoid crop loss. They also received training to help them apply IPM and ICM techniques and principles to the management of their field crop enterprises, thus improving their profitability while minimizing environmental risks. Unfortunately, the number of producers that participate may limit the benefits of this approach. Only a few farmers can participate in this intensive type of program each year.

The goal of this project is to greatly expand the group of producers receiving this information through the use of on-farm demonstrations (public meetings) coupled with the use of new communication technologies and key volunteers in the farm community.

A program assistant scouted 4 fields per farm (2 alfalfa, 2 corn) on 6 farms in the county once each week. The farms are spread across the county so the information gathered by the scout represents the diversity in soils, elevations and climatic conditions within the county. Participating farms recorded maximum and minimum temperatures and rainfall data, which was collected by the scout each week. The information was summarized each week. The summarized report was faxed to 20 agribusinesses, emailed to 36 producers and agribusinesses, key information was recorded and made available as a selection from the CCE office phone system and web pages were developed and uploaded with the current reports.

Background and justification: Weeds, insects, diseases and other factors annually depress field crop yield and quality within Oneida County. There is increased pressure for dairy farm profitability, induced by high input prices. Dairy farmers have an even greater need for critical information on crop conditions and pest infestations to enhance the speed and quality of decisions that affect the profitability of their field crop enterprise.

Cornell Cooperative Extension of Oneida County used the IPM TAG team approach from 1990-1996 and in 2000. This approach has been very successful for participating farmers. Participants have reduced or avoided crop losses through information gleaned in IPM TAG teams. Some participants have reduced pesticide applications because fields were scouted and evaluated under IPM (Sutton, et al, NYS IPM Livestock and Field Crops Project Reports, 1992-1997). They have improved their knowledge of integrated pest and crop management principles as reported in the final report of last year's project "Promoting Sustainable Production Agriculture in Oneida County through the Implementation and Evaluation of Tactical Agriculture Teams (TAG)".

The goal of this project was to expand the group of producers receiving IPM and ICM training and increase accessibility to information on local crop conditions and pest infestations. This was accomplished by providing demonstrations of IPM and ICM practices in advertised meetings on host farms sited throughout the county. In addition the information gathered by the scout was summarized each week and made available to a larger audience via fax, email, prerecorded phone messages and web pages.

Objectives:

1. Contact local producers to establish host farms for IPM/ICM demonstrations to be conducted.

2. Develop and discuss the list of ICM/IPM topics/demonstrations with host farmers to establish a schedule of the meetings (time, date, place, topic) to be held during the 2001 growing season.

3. Schedule IPM/ICM meetings on host farms after advertising through newsletters, news releases, faxes to agribusiness, pre-taped messages and web pages.

4. Conduct biweekly meetings on host farms demonstrating ICM/IPM techniques for producer groups. Evaluation of each meeting by participants.

5. Begin collection of weather information from volunteers starting when the average temperature is 41F for 5 consecutive days (April 1st) to provide more valuable information regarding GDD's and pest development (cited areas for improvement from report on last year's project "Promoting Sustainable Production Agriculture in Oneida County through the Implementation and Evaluation of Tactical Agriculture Teams (TAG).

6. Hire and train part-time program assistant to scout identified fields on host farms. Provide training for scout to produce weekly summaries.

7. Survey agribusinesses to determine interest in IPM/ICM information and local crop condition and pest infestation summaries. Ask for input on their needs for additional information.

8. Post weekly scouting report summaries developed by the program assistant to the web site, via fax to key producers and agribusinesses and on phone system for improved access. This field crop information will include, but will not be limited to, the following: time of pest arrival and/or hatches (i.e. PLH, CRW, ECB), insect populations

at point locations around the county, trends in weed escapes, crop growth stages, crop condition, growing degree days and precipitation at point locations throughout the county.

Procedures:

1. During a series of winter meetings staff solicited the support of area farmers to host a series of meetings (demonstrations) during the growing season on a series of IPM and ICM topics. Locations of these host farms are illustrated in Appendix A.

2. Host farmers were contacted by staff to determine their interest in IPM topics. A schedule of programs/demonstrations was developed from that discussion (Table 1).

3. Staff applied for NYS DEC recertification and CCA accreditation for individuals participating in these meetings. The list of topics and locations were publicized by a variety of methods including directed mailings to area farmers shipping milk and agribusinesses. The same information was sent to area agribusinesses via fax as the meeting date approached. News releases were sent out 7-10 days in advance of the meetings. The meetings were advertised in newsletters and in a web calendar.

4. The meetings were conducted throughout the growing season. All of the meetings were held at 7:00 or 7:30p.m. to maximize participation from dairy producers. We did not ask farmers to pre-register for the meetings because we did not want that to be a barrier to their participation.

5. A letter was sent in March to area farmers that were collecting rainfall and temperature data. As with previous years some producers started in mid-April while others did not start until later in the season making their information less valuable for tracking growing degree-days. We have found a few more producers that have expressed an interest in collecting weather information. The weather data was collected once each week by the scout and given to CCE staff to develop graphs for the website including up to date accumulative GDD's for corn, alfalfa and alfalfa weevil. The information was also posted on the phone system and faxed to 20 agribusinesses and other collaborators each week. Summaries were also emailed to 36 area participants.

6. Bill Parkin, previously employed as a scout last season was rehired this year and therefore required little training. He scouted 2 alfalfa fields and 2 corn fields each week on 6 farms, provided the information to the growers at the end of his visit and provided the summary to CCE staff.

7. There wasn't a great response to the survey that was sent to agribusinesses and key producers. We sent summary information of scouting activities, pest infestations, NDF of alfalfa from spring sampling, PSNT results and harvest moisture content of whole plant corn samples as they were obtained. We surveyed some select agribusinesses to obtain their evaluation of the information they received.

8. Scouting reports were posted weekly throughout the growing season, including information like: time of pest arrival, insect populations at point locations around the county, trends in weed escapes, crop growth stages, crop condition, NDF levels of

alfalfa sampled in the spring, PSNT results, whole plant moisture content of corn, growing degree days and precipitation at point locations throughout the county.

Results and Discussion:

WORKSHOPS/ DEMONSTRATIONS

A series of 10 public meetings were held on farms throughout Oneida County during the 2001 cropping season. The table below (Table 1) shows the hosts, locations, topics number of participants and dates of the meetings held during the growing season:

Table 1.

WORKSHOP/DEMONSTRATIONTOPIC	**Farm Host**	**Township**	**Date**	**Participants**
Corn planter calibration	Schieferstine Farm	Westmoreland	5/3/01	3
Crown counts (alfalfa) N fertilization of grass	Van Hatten Farm	Remsen	5/8/01	3
Alfalfa weevil IPM + Staging alfalfa	Gary Teel Farm	Remsen	5/22/01	5
Early season corn pests	Frank Frost Farm	Paris	5/24/01	3
Weed identification / control options	Rod Willson Farm	Lee	5/30/01	9
Pre-side-dress Nitrate Test / N application	Glen Taylor Farm	Bridgewater	6/5/01	9
Potato leaf hopper IPM/ armyworm/alfalfa weevil	Bob Pawlowski	Verona	6/12/01	7
Manure spreader calibration	Schieferstine Farm	Westmoreland	6/21/01	3
Fly pest management/ midseason corn pests/armyworm	Brouillette Farm	Marshall	7/10/01	4
Corn Rootworm IPM	Collins Knolls Farm	Paris	7/19/01	4
Whole plant corn moisture determination/ fermentation	Brabent Farm	Verona	8/30/01	10

Forty-eight farmers attended at least one of these meetings with a few farmers attending more than one of the meetings. Each meeting covered a specific topic or topics in a period of 1.5 to 2 hours. The programs were interactive and hands on in nature with the crop field as the classroom. Most of the programs included identification of crop damage, insects, weeds or diseases of crops with a demonstration of scouting methods where appropriate, and a discussion of thresholds and management alternatives. In most cases information from previous meetings were covered at each session, for example: while the primary topic for an evening might be alfalfa weevil IPM we also talked about staging alfalfa and even what injury symptoms are indicative of potato leaf hopper damage. Participants enjoyed the aspect of learning

in crop fields and their ability to point out other observations like crop hunger signs, weeds, insects, crop damage and have someone answer their individual questions.

The main objective of this project was to expand the group of individuals who learn IPM principles. Participation at the meetings ranged from 3-10 participants at individual events. Traditional IPM Tag groups in our county averaged 5 participants per meeting.

In the traditional Tag approach we met with those same 5 farmers biweekly throughout the season. The public meetings attracted 48 farmers and agribusiness people to attend at least one segment and be exposed them to IPM principles related to the topic of discussion at that meeting.

It is much easier for farmers to choose the topics that are interesting to them and attend a single meeting then to commit to meet every other week as is practiced in traditional Tag programs. Farmers have varying levels of knowledge of specific pests and associated IPM practices. This approach allows the farmer to select the topics of importance to them.

Unfortunately, participation at one of the public meetings does not give that participant a comprehensive view of IPM and ICM practices for corn and hay production. In addition, if you find a group of individuals who will commit to Tag in a neighborhood they will usually make every meeting and develop more than an awareness level of understanding of IPM and therefore may be more likely to adopt IPM practices. Examples of the support materials passed out at these meetings are included in Appendix B.

SCOUTING OF AREA FARMS AND EXPANSION OF THE AUDIENCE RECEIVING THE INFORMATION

Below in Table 2 is a list of activities conducted by the program assistant during the period of May 14th to August 24th on the 6 host farms in Oneida County.

Table 2.

DATE	ACTIVITY
14-May	Amass equipment, preparation for scouting
15-May	Alfalfa weevil scouting/scissor-cut
18-May	Scissor-cut sampling
21-May	Alfalfa weevil scouting
24-May	Corn scouting
25-May	Scissor-cut sampling
28-May	Alfalfa weevil scouting/corn scouting
1-June	Scissor-cut sampling
4-June	Corn population counts
7-June	Pre-side-dress N samples taken/ alfalfa weevil
12-June	Corn weed, disease, early season corn pests
14-June	Pre-side-dress N samples taken
18-June	Alfalfa weevil/potato leaf hopper/corn

25-June	Potato leaf hopper/corn
2-July	Potato leaf hopper
5-July	Corn scouting
9-July	Potato leaf hopper/armyworm
12-July	Corn scouting
16-July	Potato leaf hopper
16-July	Hung up fly pest cards
19-July	Corn scouting
23-July	Potato leaf hopper
25-July	Collected fly pest cards
30-July	Potato leaf hopper
2-Aug	Corn rootworm
6-Aug	Potato leaf hopper
10-Aug	Corn rootworm
13-Aug	Potato leaf hopper
16-Aug	Corn rootworm
21-Aug	Potato leaf hopper
21-Aug	Armyworm/crown counts

BENEFITS TO THE FARMS HOSTING THE SCOUT

The information collected during the scouting activities on each farm was given to the farmer that day. Six of the 12 alfalfa fields that were scouted this season went over threshold for alfalfa weevil. All of those fields were harvested as soon as possible. This action reduced losses in yield and quality of the crop. All of the cornfields scouted this season exceeded threshold for corn rootworm. This information was provided to the participants so that they could make a decision to rotate or treat the field the following season. Weed control in corn was more difficult this year; reports of weed escapes helped participating farmers to apply rescue treatments and reduce yield losses from weed competition. The scout also found armyworm in some grass and mixed grass alfalfa swards at greater then 8 per ft 2. The affected farmer cut the hay early and treated the outside edge of bordering corn fields. These actions significantly reduced potential losses. Participating hosts reduced crop losses this year because of information provided by the scout.

The information provided by the scout on the 4 fields scouted on each of the six farms had an impact on the farmers management of their other alfalfa and corn fields as illustrated in this table extracted from a report submitted to IPM for the 2000 growing season.

Field Corn IPM	% Will Do	% Will Try	% Will Not Do	Increase Acres in IPM
Scout for corn disease	25	50	25	1100
Scout for corn rootworm	0	100	0	1700
Conduct weed surveys	100	0	0	1850
Conduct plant population counts	75	25	0	950
Scout for early season corn insect pests	25	75	0	1600
Alfalfa IPM	% Will Do	% Will Try	% Will Not Do	Increase Acres in IPM
Scout for alfalfa disease	0	75	25	450

Scout for alfalfa weevil	25	50	25	460
Scout for potato leafhopper	25	50	25	430
Conduct weed surveys	0	75	25	520
Conduct plant population counts	25	25	50	330
Fly Management	% Will Do	% Will Try	% Will Not Do	
Use spot cards to determine levels of fly infestation	0	33	66	
Scout for stable flies on the legs of cattle and calves	33	66	0	
Increase sanitation of moist organic matter on the farm	33	66	0	
Will reduce the use of insecticides for fly control	33	33	33	
Use bait traps to help control and scout for flies	66	33	0	
Use large fly glue traps (Spider Web) in barns	100	0	0	
Release parasitoids to help control flies	0	33	66	
Crop Management	% Will Do	% Will Try	% Will Not Do	Increase Acres in IPM
Conduct soil testing to determine proper fertilization needs	100	0	0	2000
Understand the importance of crop rotation relative to pests	75	25	0	700
Understand the importance of testing forage for nutritional quality	100	0	0	1300

EXPANSION OF THE AUDIENCE RECEIVING INFORMATION ON CROP CONDITIONS AND PEST INFESTATIONS

An equally important objective of this project was to provide the information gained through scouting on the host farms to a larger group of producers. The information from each weeks scouting activities and the weather information collected by host farms were summarized by CCE staff on a weekly basis. The summarized reports were recorded as messages available to any resident 24 hrs. per day, any day of the week. Unfortunately we have not been able to afford to pay for the hardware and software to quantify the number of residents using this service. The same report was immediately faxed to 20 area agribusinesses and agencies listed under participants above as timely information to share with producers. Area agribusinesses began to share their findings with us this year and we included that information in our reports.

This activity of faxing timely information from scouting activities over the past 2 years is building better relationships between CCE and area agribusinesses and is laying a foundation for more cooperation and collaboration with our local agricultural industry. An example of a fax transmitted to our fax broadcast list is in appendix C.

In addition CCE staff published the reports on the web and developed graphs and charts of accumulated GDDs for corn, alfalfa and alfalfa weevil. Rainfall was reported in charts for each of the locations in the current season and also placed in a chart comparing 5 years of weather data from Oneida County (example in Appendix D). Additional pertinent information was developed into web pages and uploaded to our site. For example: pages were developed for armyworm this year to help producers identify them, read about their life cycle, and control alternatives. Web pages were developed with links to other sites to provide producers the opportunity to compare weed seedlings and mature weeds taken from their fields with pictures of weeds on the linked sites to aid them in identifying their samples. We developed links to provide the Cornell Guide in pdf format so that producers could take advantage of the vast amount of information it contains. Assessment reports indicated more than 2000 hits per month on our site during the growing season.

The current scout report and other pertinent information was emailed to a group of 36 producers, agribusinesses and agencies throughout the growing season. To date 147 informational messages have been shared with this group of individuals listed above as participants. Some of their comments are below:

" I just wanted to give you some feedback on your emails. It's really a great idea. We get the info so much faster. A lot of it I send on to other farmers, friends, etc. Keep up the good work! "

In response to her request for description of PLH. I wrote her an email with a written description and sent a picture.

"Jeff:
Actually, the photo didn't come out half-bad. I printed it and it made a half-page photo. A little bit blurry, but I can tell what the miserable little bugs look like. "

"Just wanted to let you know that we kept track of the "pests" and weeds through your emails. We also got information so much faster than the monthly mailings. "

I sent a survey to this group in May to ask them to select from a list on interest areas so that I could send targeted information to them. This was one response:

"You send allot of email, however most of it is interesting info. I was trying to pick out what I wanted but had a hard time choosing. Keep it up! Thanks"

Conclusions:
The main objective of this project was to expand the audience of producers that received timely information about local crop conditions, local pest infestations and area weather conditions. We successfully transmitted the information that was gleaned on 6 farms to 48 producers and agribusiness who attended the public meetings, emailing the information to 36 producers and agribusinesses, faxing the information to 20 agribusinesses, reaching more through the internet and all of the other producers who heard the information from this network of people who received the information from us.

Some of the activities of this season that probably had the greatest impact were our reporting of NDF values of local alfalfa fields from scissor-cut sampling of local alfalfa fields this spring, which helped producers to identify the optimal time of harvest for alfalfa. Alfalfa weevil was over threshold in our area this season. Reporting this information through this network had the potential to reduce crop yield and quality loss in area alfalfa fields by farmers taking action after receiving that timely information.

We determined nitrate content in a number of soil samples brought in by farmers and our program assistant. We reported the information from these results along with crop history, manure rates and planter N rates through this network. Area producers had the opportunity to compare the results with similar situations on their farm. Producers could use this information to estimate their need to apply N at side-dress or bring a sample in for us to analyze. Individuals who submitted samples were able to apply the

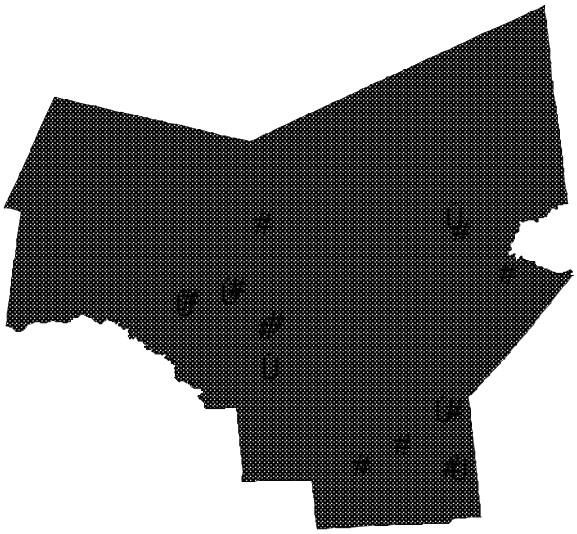
needed rates of N to optimize corn yields and conserve on N applications where it was not needed.

We purchased a tree chipper this season to chop whole plant corn samples for dry matter determination. Early results indicated no correspondence between ear kernel milk-line and whole plant moisture content. We quickly sent that information out through this network and offered a free service of testing whole plant moisture content for any farmer in our area. A number of farmers brought in samples along with our program assistant. The results were reported by area, planting date and relative maturity of the corn hybrid through the network for farmers to use for comparisons in their areas with the hybrids they planted. Area farmers had a great opportunity to use this timely information to help them make the important decision on when to harvest their corn to optimize fermentation.

Budget (2001)

WAGES AND SALARIES	
Project Director Web page development @ $21/hr x 19 hrs	$400.00
Summer Program Asst. .5FTE @ 10/hr x 15wks	$3000.00
Supplies: postage, mailers ($80 x 5)	$37.58
Printing:	$195.09
Postage:	$213.65
Mileage:	$1248.68
TOTAL:	$5095.00
EXPECTED OR PENDING CONTRIBUTIONS FROM OTHER GRANT PROPOSALS	$0

Appendix A
Black dots mark the sites of workshops held in Oneida County in 2001. Stars mark the location of farms scouted in Oneida County.

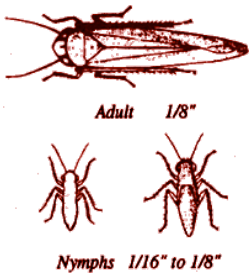


Appendix B

An example of a handout provided at one of the twilight meetings held at a host farm. (formatting changed for this report).

Identification

- Adults are bright lime green and can fly.
- Nymphs are yellow-green and cannot fly.
- Potato Leafhopper (PLH) adults overwinter in the south then travel to New York on spring storms.
- PLH migrate back to southern overwintering sites in the fall.
- Females lay their eggs in alfalfa stems, leaf petioles and leaf veins.
- Each PLH generation lives approximately 28 days. There may be more than one generation per season.
- The greater the heat, the faster PLH populations develop.
- Both PLH adults and nymphs can cause damage.
- Damage symptoms include "V"-shaped yellow patches on tips of leaves and possibly stunting of the plant.
- Economic losses occur from reduction of % crude protein. Excessive PLH feeding may also reduce dry matter yield.



SAMPLING

- Sampling should occur from late May (Memorial Day) until early September.
- New seedings are at relatively greater risk to PLH injury than established stands.
- Fields should be sampled every 7 days.
- Use a 15"-diameter sweep net and the sequential sampling plan below.

- Each time the net passes in front of you is considered one sweep.

Sweep Set	<3"			3" - 7"			8" - 10"			>10"		
	N		M	N		M	N		M	N		M
1	*		*	*		*	*		*	*		*
2	*		*	*		*	*		*	*		*
3	2	*	9	9	*	20	19	*	41	44	*	75
4	4	*	11	14	*	25	29	*	50	64	*	95
5	5	*	13	18	*	30	39	*	60	84	*	##
6	7	*	15	23	*	35	49	*	70	##	*	##
7	9	*	16	28	*	40	59	*	80	##	*	##
8	11	*	18	33	*	45	69	*	90	##	*	##
9	13	*	20	28	*	49	79	*	##	##	*	##
10	19		20	49		50	99		##	##		##

- N= No management needed at this time
- M= Management needed as soon as possible

Analysis

- Shorter alfalfa (less leaf surface area) is at greater risk for PLH injury.
- Early harvest of alfalfa can be effective in controlling economic populations.
- Action thresholds for new seedings may be reduced under conditions of severe stress such as drought.
- Chemical control is sometimes necessary when economic populations occur early in the cutting cycle. Consult the current issue of the Cornell Guide for Integrated Field Crop Management for possible insecticide options and management considerations.
- If field is at threshold and rain is expected in 24-36 hours, delay management action and resample after the storm. PLH populations may have been reduced.

IMPLEMENTATION

- Clean harvest whole fields to eliminate harborage sites.
  - Green chopping in strips is a poor management practice.
- Only treat fields with an insecticide if canopy is adequate for spray interception.

- Document all management actions taken for future reference.

Re-evaluation

- Recheck fields after harvest to determine population status.

Appendix C
An example of information faxed to area agribusinesses.

July 7 2001

ARMYWORM ALERT!!!!

Cooperative Extension has been called out on farms to check on armyworm recently to find this well over threshold in the 5th instar and doing a great deal of damage. This pest can devestate a field over night. It prefers grasses but will eat other crops if food supplies run out. So far it has been found in corn, oats and grass hay.

Find attached a description of armyworm, line drawing and diagram of size and instar from the IPM field corn pocket guide. In addition there is information from Purdue on the life cycle of this pest and recommended pesticides and rates to control armyworm on corn from the Cornell field crops guide.

It is important for you to share this with area farmers and encourage them to scout their fields for this pest.

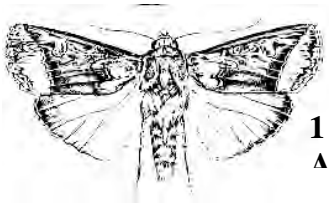
Hope this information is helpful.

Jeff Miller
Extension educator

This fax also included line drawings of common armyworm, diagram of the size of instars and other pertinent information developed by Ken Wise into a handout (see below, format changed for inclusion in this report). Additional information from the Purdue website was includedwith their web address.

IDENTIFICATION

- *Adult moths of armyworm are attracted to grass weeds in cornfields where they lay eggs. The moths are also attracted to grass hay fields and small grains.*



1 ¾"
Adul

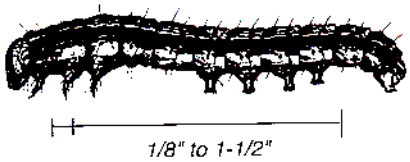
True Armyworm

- Larvae are smooth cylindrical pale green (when young) too brownish.
- Mature larvae are smooth and marked with two orange, white-bordered strips on each side.
- Larvae range in size from 1/8 inch to 1.5 inches

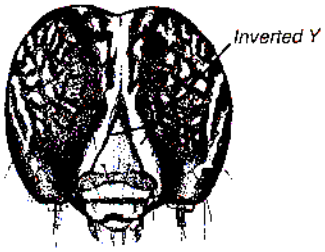
- True armyworm attacks corn from emergence to July.

Fall Armyworm

- Larva color varies from tan, green too nearly black.
- Larvae range in size from 1/8 inch to 1.5 inches long.



- Larvae have distinctive inverted Y-shaped suture on the front of the head.

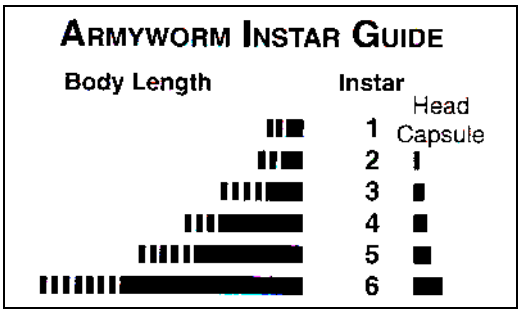


- Fall Armyworm attacks corn from July to harvest.
- Chewed leaves and pellet like frass are indications of armyworm infestations. Armyworms feed at night on leaves of corn, grasses and small grains. During the day they are found in the whorl of the corn plant or under litter on the soil surface.
- Armyworms may "march" from badly infested areas during the day from one field to the next. There can be 100's to 1000's of armyworms in a march.

SAMPLING

- Start sampling in the field in May. Repeat scouting every 7 days.

- Inspect and record the number of armyworms on 20 consecutive plants in 5 areas of the field.
- Collect 10 larvae and determine the size of the instar by measuring on the instar guide.



ANALYSIS

- The suggested action threshold for armyworm in field corn is 3 larvae per corn plant and 1.25 inches or less in length.

MANAGEMENT ALTERNATIVES

- Insecticide treatment is not typically effective against larvae larger than 1.25 inches. Armyworms pupate around the time they reach 1.5 inches long and will not be a further problem.
- Chemical control is sometimes necessary when economic populations of small larvae occur. For selection of an insecticide consult the current issue of Cornell Guide for Integrated Field Crop Management.
- When spraying, spray only the infested area and 20 – 40 feet surrounding the border.
- In heavily infested fields you may find evidence of parasitoids (biological control agent) laying small white eggs on the larva of the armyworm.

IMPLEMENTATION

- Plow your field and control weeds reduce armyworm problems.
- Monitor plants closely, particularly in fields with conditions favoring armyworm outbreaks.
- Document all actions taken.

REEVALUATION

- Review previous pest statistics and your crop plan for the coming year to ascertain potential problem fields
- Review previous pest statistics and your crop plan for the coming year to ascertain potential problem fields

A second example of information faxed to area agribusinesses:

ALERT!!!!!

Its time to check the moisture content of your corn

If you plan to harvest corn for corn silage it is imperative that you sample your corn and check the moisture content.

Results from all over the state show that the dry weather has impacted the whole plant moisture content of corn fields.

Example: corn planted in Aurora on May 10th Pioneer 34B23 was at the beginning of dent stage and had a whole plant moisture content of 70% when it was harvested last week.
Example: corn planted in Verona on May 28th (96 day hybrid) late dough stage no denting of ear had a whole plant moisture content of 73%.
Example: corn planted in Chadwicks on May 5th (93 Day hybrid) early dent stage had a whole plant moisture content of 67%.

We have tracked GDDs this season at 3 locations. As of August 19th the accumulated GDDs in Verona were 1958 in Paris 1905 and Bridgewater 1759.

During the May through August period we received 13" of rain. That may not seem deficient until you see that we received 7" of the 13" in June in a few storms the rest of the period has been very dry.

Conclusion: We have to throw out our ideas of milkline and greenness of the plant as a predictor of whole plant moisture content this year. We have to harvest and chop plants NOW and determine their moisture content otherwise we will put up silage TOO DRY and we will have poor fermentation and poor quality corn silage to feed our cows. The whole plant moisture content of corn should be between 61% and 65% for upright silos, 65% for bags and 68% to 72% for bunks

The method of sampling is important. Plants should be selected from individual fields representing different hybrid maturities, significant differences in dates of planting and also significant differences in soil types and elevation. You should select at least 12 plants from a given

field. Each plant that is taken should be representative of the field. Plants should be obtained from across the entire field and harvested at the height at which you plan to chop ie at 12" height.

The plants should be harvested and chopped for subsampling and moisture determination so that all of these steps are accomplished in a short period of time otherwise the measurement will be inaccurate.

Cornell Cooperative Extension of Oneida County has a tree chipper to process your corn plants and an accurate scale and microwave for dry matter determination. We will process your samples at no charge. We ask you to call us before you take your field samples so that we will be prepared when you bring them to our office. Call us at 736-3394. Remember the accuracy depends on processing the sample quickly after the sample is taken.

Appendix D
An example of webpages that were developed and updated regularly throughout the growing season. This scout report was developed and updated weekly during the growing season.

SCOUT REPORT
The following crop report is based on information gathered by a crop scout from six farms located within Oneida County. The following information was collected on June 12,2001.

Alfalfa weevil is still above threshold in several of the areas scouted this week. However insecticide applications are not recommended due to the fact that alfalfa is at or nearing harvest time. On fields that have been harvested it is imperative to resume scouting of the stubble and regrowth particularly in fields that had signs in the first crop of weevil presence. Note however that regrowth needs to show at least 50% tip feeding for an action threshold. Also important to note when scouting regrowth for weevil is the size of the larva. If larva are near 3/8" in size they are close to the time of going to cocoon and a non damaging stage, so insecticide treatment is not warranted. Also based on GDD's and insect development we see more confirmation that weevil larva activity is on the downhill side.

Corn fields are doing well in most areas, the needed rain and heat was well received. Although weed escapes are still present in many fields requiring some sort of rescue treatment to limit the effects of any yield penalty. With the corn growing in leaps and bounds it may also be time to PSNT your fields if the corn is between 6 and 12 inches measured at the collar. This is the optimum time for for sidedressing nitrogen if it is needed, the PSNT will tell you that. The procedure for a PSNT is to take a representative soil sample in your corn field using 12 inch cores taken from between the rows. Follow a Z pattern when sampling, and limit field size to no more than twenty acres per sample. Also take care not to sample unusual areas of the field and to separate fields based on management strategies that is, how much manure was applied, years following sod, soil type and anything else that you may do different between fields. Next mix the soil thoroughly in a plastic pail, breaking up large lumps and separating out rocks or any other debris, and sub sample approximately two cups of soil.

Immediately bring the sample to the CCE office in Oriskany. If this is not possible dry it immediately by spreading the sample in a thin layer on a non absorptive surface, this is a very important step, and let dry over night in an area with free air movement or use a fan set on low sped to hasten the drying. Now you can bring the soil sample to Oriskany when time allows to be tested. There is a small fee for this service of 3 dollars to cover materials. This is a small amount of money spent to either ensure adequate N on your corn or prevent an unnecessary application.

Also look at the Oneida County Extension Service website to view graphs displaying the results of the scissors cut NDF project along with Growing Degree Day accumulations and rainfall data from weather stations in the county. This website is located www.cce.cornell.edu/oneida when this page is reached click on visit our website and follow the icons on the page to reach the mentioned information.

Please check back regularly for updates to this crop report. It will be updated on Tuesday June 19.

Feel free to call Mike Dennis with any questions or comments about anything in this report. To do this dial one at the end of the massage and press 103 when prompted.

Thank you.

Weather Conditions

The following information is based on weather information collected from several weather stations throughout Oneida County as of June 4, 2001.

GDD using 86/50 for corn are ranging from 294 to 374, data collection started May 15 for corn. Approximately 115 GDD's are required for emergence with roughly 70 GDD's needed to make each leaf. Based on these numbers much corn is in the 2 – 4 leaf stage depending on planting date.

Alfalfa GDD's which are used for both alfalfa weevil management considerations are as follows. Base 48 is used for weevil management and to date is ranging from 482 to 561. Fourth instar weevil larva are ususually around when 550 GDD's are reached. This stage of weevil will do 80 percent of the damage to a field of alfalfa. Insecticides are not recommended for treatment of fourth instar weevil, harvest is preferred if within one week of harvest, which we currently are, with much alfalfa having left the field. Scout current stands and regrowth to see if weevils have reached threshold levels. Fourth instar weevil are seldom a problem in regrowth due to the fact

that the insect will be spinning a cacoon shortly and moving to the adult stage, which causes little economic damage.

At this time field conditions are good in most areas and drying out rapidly for field operations.

Also look at the Oneida County Extension Service website to view graphs displaying the results of the scissors cut NDF project along with Growing Degree Day accumulations and rainfall data from weather stations in the county. This website is located www.cce.cornell.edu/oneida when this page is reached click on visit our website and follow the icons on the page to reach the mentioned information.

Please contact Mike Dennis at 315.736.3394 extension 103 for questions regarding this update.

Thank you.

Other examples of a webpages:

POTATO LEAF HOPPER

Facts

Unlike the weevil, potato leafhopper (PLH) occurrence is not correlated with GDD. Leafhoppers migrate from the south to the northeast from mid-May to late June as a result of weather patterns and crop dynamics in the south. The PLH removes sap from alfalfa leaflets, depositing a secretion that causes the characteristic v-shaped yellowing. PLH populations do not conform to predictable patterns. The short life cycles (21-30 days; nymph to adult) coupled with profuse egg-laying, produces overlapping generations throughout August. Adults are a yellow-green, 1/8 in. long and wedge shaped. If detected late, PLH can dramatically decrease quality and yield of newly established and regrowing alfalfa.

Detection and Management

Early detection of PLH is critical for minimizing yield/quality loss. Damage is little if alfalfa is >14 in. when feeding occurs, whereas at 2-4 in. one PLH/sweep could cause economic loss. PLH infestation is quantified by sweeping fields with a 15 in. diameter sweep net. Five sets of sweeps (10 sweeps/set) collected from different areas are generally used for calculating thresholds and making management decisions (Table 2).

#of sets	1		2		3		4		5		6		7		8		9		10			
No treat or treat	N	T	N	T	N	T	N	T	N	T	N	T	N	T	N	T	N	T	N	T		
<3” tall	****		****		2	9	4	11	5	13	7	15	9	16	11	18	13	20	19	20		
3”-6” tall	****		****		9	20	14	25	18	30	23	35	28	40	33	45	38	49	49	50		
7”-10” tall	****		****		19	41	29	50	39	60	49	70	59	80	69	90	79	100	99	100		
> 10” tall	****		****		44	75	64	95	84	115	104	135	124	155	144	175	164	195	199	200		
**********	****		****		****		****		****		****		****		****		****		****			
Field Counts																						
Running total																						

Potato leaf hopper scouting table

). If the number of PLH exceeds the threshold a decision for action should occur. Normally the preferred action if the stand was due to be harvested within 10 days would be to harvest early. This is a clean harvest leaving no food source for PLH. Unfortunately, weather conditions have spread out first harvest dates of fields even those that may be next to each other. Adult PLH have wings and can move to adjacent fields therefore, early harvest may be less successful at controlling PLH this year. If you harvest early to control PLH you should monitor PLH populations in nearby fields. Regrowth should also be monitored for PLH. Don't waste time scouting fields with less than 50% alflafa. Concentrate efforts on your better alfalfa fields and new seedings.

Damage to Crops

Potato Leaf Hopper Control

Insecticide	**Lbs active ingredient per acre**	**Fluid oz. product**	
Cyfluthrin (baythroid)	0.0125-0.025	0.8-1.6	Wait 7 days after application before harvest

Chlopyrifos (Lorsban 4E)	0.5	16	Wait 14 days 0.5 ai/a Wait 21 days 1.0 ai/a
Dimethoate	0.25-0.5		Wait 10 days before feeding or harvest
Lambda-cyhalothrin (warrior-T)	0.01-0.025	1.28-3.2oz	Wait 7 days before harvest
Permethrin (Ambush,Pounce)	0.1-0.2		>0.1 lb/a rate 14 days, <0,1 lb/ac immeciate

For further information on leafhopper scouting and control measures please contact Mike Dennis or Jeff Miller at the Extension Office

email Mike Dennis

email Jeff Miller

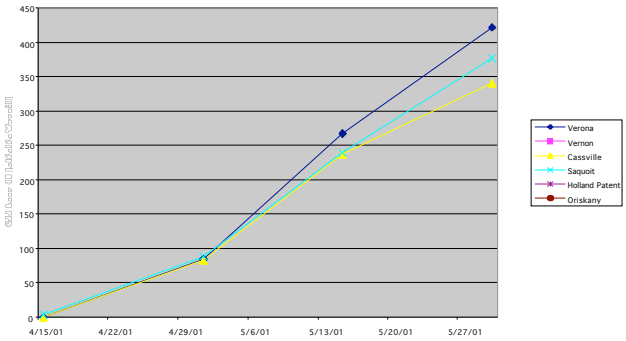
Return To Fieldcrops

Cornell Cooperative Extension of Oneida County

Growing Degree Days for Oneida County

Six farmers have volunteered to collect maximum and minimum temperatures for us at locations throughout the county. The following is a result of their efforts to date .

Growing Degree Days (base 48) alfalfa weevil development since April 15th 2001



Degree Days for Peak Occurrence (50%) of Alfalfa Weevil Life Stages

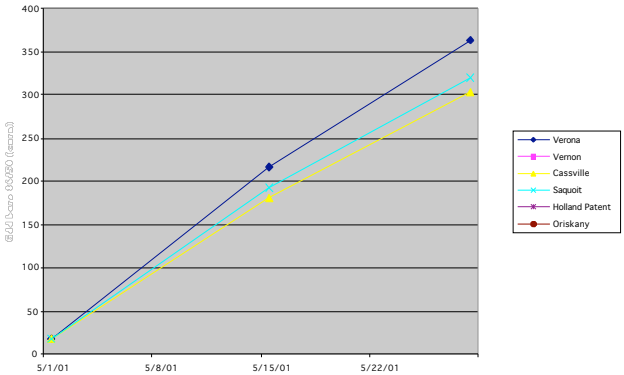
Stage	Degree Days
Egg hatch	280 DD
Instar 1	315 DD
Instar 2	395 DD
Instar 3	470 DD
Instar 4	550 DD
Cocooning	600 DD
Pupa	725 DD
Adult emergence	815 DD

(Base Temperature 48°

The table to the left indicates the developmental stage of alfalfa weevil-based on growing degree days base 48. This is important because scouting for pinhole feeding can be conducted after 280 GDDs. The majority of the damage will occur at 550 GDDs and beyond giving a grower the opportunity to harvest early if a treshold population is reached and avoid significant losses.
For more information about weevils hit this button:

Alfalfa Weevil

Growing Degree Days for Corn 86/50 in Oneida County



For growing degree days in Oneida County in 2001 and how they are related to alfalfa and grass development hit the button below

Alfalfa and grass maturity